

OSRAM PLANON®

New Fluorescent Technology

The OSRAM PLANON® is a two-dimensional, mercury-free light source based on the operating principle of excimer discharge.



OSRAM technology sets standards Mercury-free light tile

The luminous body of OSRAM PLANON® can be compared with a tile. Thanks to its specific shape and unique uniform light output, PLANON® opens new construction and application possibilities for the lighting industry.

Unique advantages

The new mercury-free discharge light source OSRAM PLANON® has a number of unique product characteristics:

Unique lighting power

- wide viewing and illumination angle
- uniform high luminance from center to edge
- diagonal lengths from 10.4" to 21.3"
- ultra flat at <10mm (0.4")

Extremely long lamp life, up to 100,000 hours

- absence of failure-prone electrodes
- no bulb darkening

Extremely thin ≤10mm

Mercury-free

- luminous flux not related to temperature
 - same light output from -30°C to +85°C ambients
- instant light with high luminance

Lamp and ballast available as system



Applications

- LCD backlighting
- Architectural effects
- Digital imaging
- Indoors or outdoors
- Signage backlighting
- Film and photography lighting
- Information displays
- Task lighting

OSRAM OPTO SEMICONDUCTORS

THE LEADER IN LED GENERAL LIGHTING SOLUTIONS

Innovative light-emitting diodes are compound semiconductors that convert electric current directly to light. Just a few millimeters in size, LEDs offer distinct advantages through advanced technology, making them a real alternative to conventional lamps in many applications.

TECHNOLOGICAL ADVANTAGES

- Low power consumption and heat generation
- Extremely long life
- Negligible early failures
- High color efficiency
- Small dimensions
- High resistance to shock and vibration
- Directed radiation
- No IR/UV radiation -Optimized power supplies and controls

USER BENEFITS

- Creative design possibilities for innovative light solutions through a variety of LED colors, compactness and flexible modularization
- Economically attractive because of low power consumption, long life and minimal maintenance
- Maximized safety due to excellent reliability, even in difficult operating conditions

CREATIVE LIGHT SOLUTIONS FOR ALL KINDS OF APPLICATIONS

LED modules and power supplies from OSRAM Opto Semiconductors are the ideal basis for creative design-ins and new light solutions in a wide range of applications:

- Colored light of your choice - LEDs emit yellow, orange, red, blue, green and white light, 3 color multi - LED (RGB) option are available
- Colored light with plexiglass optics for highly decorative effects
- Can be adapted to complex structures - e.g. backlighting of letters - through compact, flexible modules
- Extremely low-profile light solutions
- Reliable orientation lighting that is easy to install and integrates perfectly in the existing architecture with minimal structural change
- Economical operation through low power consumption
- Reliable outdoor operation through mechanical ruggedness in a wide range of operating temperatures
- Ideal for powering by solar energy through minimum consumption and low forward voltage

VERTICALLY INTEGRATED

OSRAM Opto Semiconductors offers the core competencies needed for LED lamp module and power supply production - from discrete components through electrical, thermal and optical design to complex modules and electronic controls.

CONNECTORS

Please call 1-800-LIGHTBULB for assistance.

COMPLETE SYSTEMS ENGINEERING

Our solutions come complete with matching power supplies, dimming and RGB controls. Dimmers are compatible with industry standard protocols such as 0-10 V and DMX 512 (with DMX to 0-10V converters).

COMPLETE LIGHT SOURCE SOLUTION

Combined with OSRAM SYLVANIA, OSRAM Opto Semiconductors offers the full spectrum of lighting solutions for any project.

Standards and regulations

In the case of LEDs and LED modules, there are regulations for protection of the human eye against excessive doses of radiation. These are based on the tolerances issued by the ICNRP. OSRAM Opto Semiconductors can submit certification by an accredited test laboratory for all standard modules. LED lamp modules and power supplies by OSRAM are UL recognized and listed in the Sign Accessories Manual (SAM).

The stipulations of the low voltage directive are not applicable to LED modules because of their operating voltage of 10 or 24 V DC. LED modules do not produce any interference in the context of EMC.

The major directives for eye safety:

1. IEC 60825-1 A2: *Safety of Laser Devices*
2. ANSI IESNA RP - 27.1 to 27.3
3. ACGIH (*American Conference of Governmental Industrial Hygienists*)
4. CIE TC 6-47 *Photobiological Safety of Lamps and LampSystems*

TRULY ILLUMINATING: LED MODULES FROM OSRAM OS

LED modules from OSRAM Opto Semiconductors consist of a certain number of LEDs with integrated passive or active current regulation. The single LEDs are mounted on either rigid or flexible printed circuit boards. Secondary optical elements such as lenses, reflectors and surface light guides can be added for enhanced performance.

POSSIBILITIES TODAY AND TOMORROW

OSRAM Opto Semiconductors produces a high-performance selection of fully contained LED modules - power-saving and cost-saving - for a wide range of conventional and emerging uses in general lighting.

THREE FAMILIES - VERSATILE AND FLEXIBLE

LED modules without a lens system

- LINEARlight (Rigid or flexible; Monochromatic or integrated RGB)
- BACKlight
- COINlight

LED modules with a lens system

- EFFECTlight

LED modules with light guides

- MARKERlight (rectangular, square, round)
- LEDtag

LED MODULES ACCESSORIES

- Optics, dimming

ELECTRICAL DESIGN OF MODULES

In electrical terms, LEDs are semiconductor diodes. Their major electrical characteristics are:

- Forward voltage V_f
- Forward current I_f

To ensure long life, the specified forward current should not be exceeded. Modules from OSRAM OS exhibit the following features:

- Series connection of LEDs
- Combined with passive and active current limiting
- Current control device (BCR) are built in for all the OSRAM LED lamp modules
- Operation on 10 V DC and 24 V DC
- Easy operation with OPTOTRONIC® power supplies

THE RIGHT CONNECTION - OSRAM LED SYSTEMS FOR LIGHTING

OSRAM Opto Semiconductors offers you more than first-class LEDs and LED modules. You no longer have to spend your time looking for any extra components you need. Instead you can focus on what is essential for you: your product and your business. In addition to LED modules we deliver optimized power supplies, dimming and RGB controls, and other accessories (pg. 264 & 265). For the latest information call 1-800-LIGHTBULB.

OPTOTRONIC POWER SUPPLY

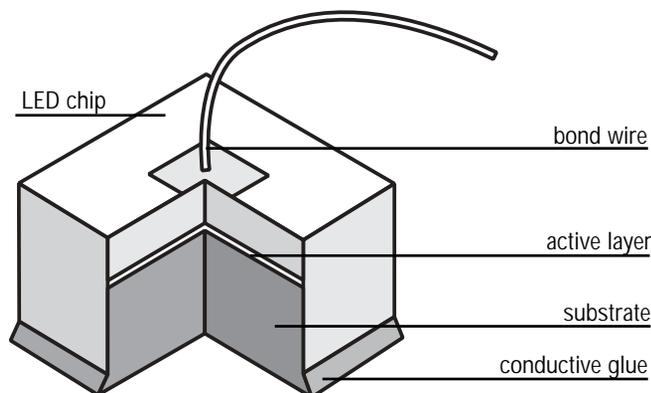
- Electronically stabilized, load-insensitive DC output voltage
- Shortcircuit-proof and overload protected
- Designed and built to all applicable standards
- For power supply and packages, please refer to page 265
- Long Life
- Low ripple voltage

OSRAM OPTO SEMICONDUCTORS: LED TECHNOLOGY IS THE FUTURE

HOW DOES AN LED WORK?

A light-emitting diode consists of several layers of semiconductor material. When the diode is forward biased, light is generated in a thin layer, the so-called active layer. Unlike incandescent lamps, which radiate a continuous spectrum, an LED emits an almost monochromatic light of a particular color. The color of the light depends on the material used. Two material systems - AlInGaP and InGaN - are used for creating high brightness LEDs in all colors from red to blue and also in white using phosphors.

The efficiency of LEDs has very much improved in the last few years, and has already reached levels of 30lm/W and more - depending on the color. This is the result of high-quality production and advanced technologies.



LED PACKAGES

The typical size of an LED is approximately a few hundred micrometers. The semiconductor is mounted in a package for easy electrical contact and environmental protection. There are two basic types of packages:

•THT (through-hole technology)

This kind of package is soldered "through holes" to the circuit board. The most common type is the radial 5 mm package. The LED chip is seated in the reflector, which is connected to the cathode lead. A bond wire establishes electrical contact to the anode. The light is emitted by a lens integrated into the package. Different radiation characteristics are produced as a function of chip-to-lens spacing and the shape of the lens.



•SMT (surface-mount technology)

This modern design consists of a plastic package that also serves as the reflector. The LED chip is seated in the cavity. This cavity is filled with epoxy resin to improve light output and protect the chip against environmental influences. SMT components can be assembled faster and with better quality than THT components.



ELECTRICAL DATA

The highest luminosity is produced with a DC voltage source. The necessary forward voltage depends on the color of the LED light, varying between 2 and 4 V at forward currents up to 70mA.

TEMPERATURE RESPONSE

The optical output power drops as temperature increases. Temperature dependence is more significant in yellow LEDs than in green ones. This drop in power, as a function of temperature, can be reversed and has nothing to do with degradation. The maximum operating temperature for LEDs is normally 100 °C, and this should not be exceeded.

LIFETIME AND DEGRADATION

Just like a conventional source of light, the intensity of LED light gradually diminishes in the course of continuous operation. When an LED produces 50% of its original luminous efficiency, it has, by definition, reached the end of its life.

Under reasonable operating conditions LEDs can last up to 100,000 hours.

WHITE LIGHT LEDs

To generate white light, the radiation of a blue diode is used to stimulate a secondary (fluorescent) emission from a properly chosen phosphor. By setting the appropriate concentration of luminescent material, the blue primary light from the diode combined with the yellow light emitted by the phosphor creates a spectral wavelength distribution that is perceived as white by the human eye. The color rendering index thus achieved is approximately 80.



The following item was accepted into the 2003 IESNA Progress Report which recognizes innovative products introduced to the industry during that year.

LINEARlight Color Mix

HOW TO READ PRODUCT INFORMATION - LED lamp modules

Product Number	70011	70017	70010	70027
Ordering Abbreviation	BACKLIGHT/615/OS/LM03A/A	FXLIGHT/505/OS/WL01A/V	LINEAR/OS/LM01A/W	ML/82X33/OS/ML01B/B
Operating Voltage (V)	10	24	10	10
Power (W)	4	1.3	3.2	1.2
Color	Amber Red	Verde	White	Blue
Wavelength (nm) Color Coordinates	617	503		470
LEDs/Module	32	10	32	12
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	559 x 30 x 6	70 x 28 x 34.5	448 x 10 x 3.5	112.3 x 48 x 7
Inter-LED Spacing (mm)	15		14	
Luminous Flux (lm)	54		29	
Luminous Intensity (cd)	0.535	2000	0.3	
Viewing Angle (°)	120	4	120	
Maximum Board Spacing (mm)				
Luminous Area (mm ²)				79.5 x 3

Operating Voltage (V)	DC voltage applied to the entire module.
Wavelength (nm) / Color Coordinates	The center wavelength of the light emitted by the LED expressed in nm OR the CIE X and Y color coordinates for white light sources.
Inter-LED Spacing (mm)	Space between individual LEDs mounted on the module.
Luminance (mlm) or (cd/m²)	When reported in mlm, this is the total amount of light leaving the module, also known as luminous flux. When reported in cd/m ² , this is the brightness of the LED module when viewing it. The cd/m ² value applies only to MARKERlight products.
Luminous Intensity (cd)	Intensity of the light shining out from the module. This value is especially important on EFFECTlights.
Viewing Angle (°)	2 times the angle between the peak intensity at the center of the beam and the 50% intensity direction.
Maximum Board Spacing (mm)	Applies only to BACKlights. This is the maximum separation between two consecutive boards in a BACKlight module.
Luminous Area (mm²)	Applies only to MARKERlights. This is the area that actually appears lit when looking towards the module.

Weight & Measurement

For weight and measurement information, please visit www.sylvania.com.

OPTOTRONIC® LED Power Supplies

OSRAM OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage from 100 to 240 V_{AC} enables worldwide use on single-phase_{AC} power lines. These supplies are available in 10 V_{DC} and 24 V_{DC} outputs. The OPTOTRONIC power supplies are protected against open circuit, short circuit, and overload and overheating. They are UL recognized and FCC compliant.

KEY SYSTEM FEATURE

- New, small enclosure size (OT6, OT20, OT25 fit into small junction box)
- Lightweight, low profile
- -20°C through 50°C operation
- Wide input voltage range
- Isolated output
- UL Class 2 output
- Weather resistant housing
- Long life
- Short circuit and overload protection
- Low power supply losses
- Remote mounting possible
- OT50 model rated for outdoor, damp location

OT RGB controls are ideal for Colormixing or Color sequencing applications

- Pulse width modulation (PWM) dimming
- Dimming range of 0-100% with OTDIM & OT RGB 3CH DIM

Item Number _____ 51500 OT 6/ 100-240/ 10 COS _____ Circular Opto Semi-conductors; S: Square
 OPTOTRONIC _____ Output Voltage (DC)
 Output Wattage (6 Watts) _____ Input Voltage (AC)

Item Number	Description	For LED Lamp Modules Family
51500	OT6/100-240/10COS	LINEARlight, BACKlight, MARKERlight (Rectangular),and LINEARlight FLEX SIDELED
51505	OT25/120/10	LINEARlight, BACKlight, MARKERlight (Rectangular),and LINEARlight FLEX SIDELED
51508	OT50/120/10	LINEARlight, BACKlight, MARKERlight (Rectangular),and LINEARlight FLEX SIDELED
51501	OT6/100-240/24COS	MARKERlight (Square & Circular), EFFECTlight, COINlight TOPLED, COINlight SIDELED and LINEARlight - FLEX TOPLED
		LINEARlight Colormix RGB and LINEARlight Flex TOP Colormix RGB
51512	OT20/120-240/24S	MARKERlight (Square & Circular), EFFECTlight, COINlight TOPLED, COINlight SIDELED and LINEARlight - FLEX TOPLED
		LINEARlight Colormix RGB and LINEARlight Flex TOP Colormix RGB

System Life / Warranty

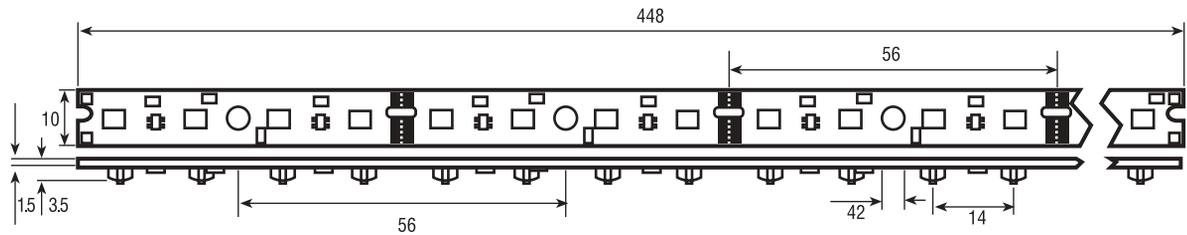
OPTOTRONIC LED Power Supply Products are covered by our LED System Warranty, a comprehensive light source, and power supply system warranty. For additional detail, refer to our latest version of the LED System Warranty bulletin found in the warranty section of this catalog.

OSRAM LED Lamp Modules Accessories

LINEARlight OPTICS OP4x1-20

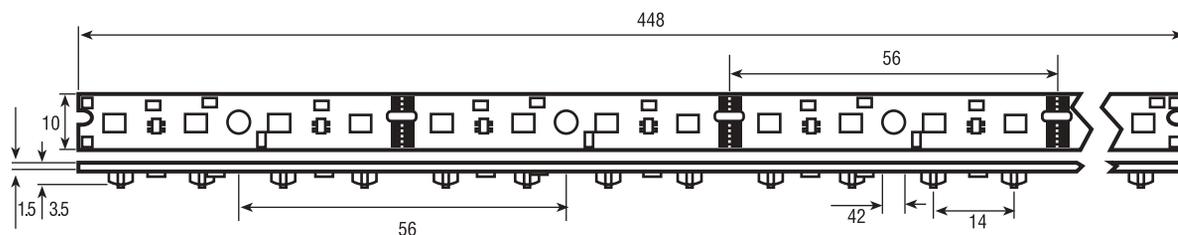
LINEARlight Optics is a supplementary optical lens for the LINEARlight module. The optical effect of the optics is a reduction of the viewing angle from 120° to 20° and / or 25° and proportional intensification of the light. The optic provides light intensification and mechanical protection of the LED module. The optic is suitable for all LED colors.

Each modules lens optic is 56_{mm} long and covers 4 LEDs, which is the smallest divisible unit of LINEARlight. Eight optics are needed to cover the full length of a LINEARlight strip. The guide pin feature ensures precise alignment that can be easily snapped into place.



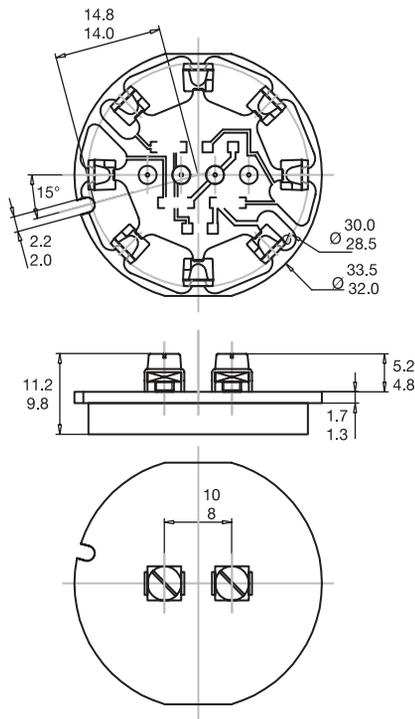
LINEARLIGHT – RIGID

Product Number	70006	70007	70008	70083
Ordering Abbreviation	LINEAR/587/OS/LM01A/Y1	LINEAR/615/OS/LM01A/A	LINEAR/525/OS/LM01A/T1	LINEAR/610/OS/LM01A
Operating Voltage (V)	10	10	10	10
Power (W)	4.00	4.00	4.00	4.00
Color	Yellow	Amber Red	True Green	Orange
Wavelength (nm)	587	617	525	606
LEDs/Module	32	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	448 X 10 X 3.5	448 X 10 X 3.5	448 x 10 x 3.5	448 X 10 X 3.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000
Luminous Flux (lm)	69	54	36	86
Luminous Intensity (cd)	0.72	0.56	0.38	0.90
Viewing Angle (°)	120	120	120	120



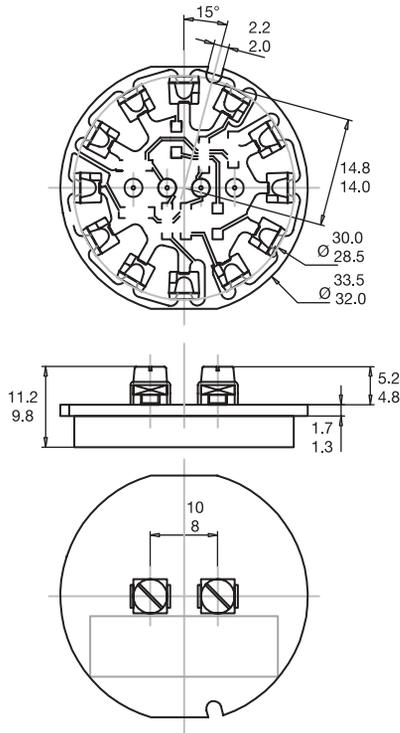
LINEARLIGHT – RIGID

Product Number	70009	70010	70044
Ordering Abbreviation	LINEAR/470/OS/LM01A/B1	LINEAR/OS/LM01AW1	LINEAR/633/OS/LM1A/S1
Operating Voltage (V)	10	10	10
Power (W)	4.00	3.20	4
Color	Blue	White	Super Red
Wavelength (nm)	470		633
Color Temp (K)		5400K, 4700K	
LEDs/Module	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	448 x 10 x 3.5	448 X 10 X 3.5	448 X 10 X 3.5
Inter-LED Spacing (mm)	14.000	14.000	14.000
Luminous Flux (lm)	9	29	54
Luminous Intensity (cd)	0.09	0.30	0.56
Viewing Angle (°)	120	120	120



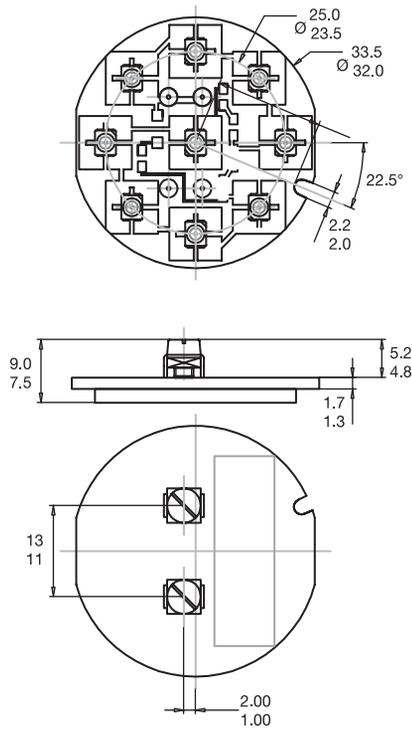
COINLIGHT – SIDELED – 8 LEDS

Product Number	70046	70047	70048	70049	70050
Ordering Abbreviation	COIN/615/OS/CM01B/A	COIN/587/OS/CM01B/Y	COIN/525/OS/CM01B/T	COIN/470/OS/CM01B/B	COIN/OS/CM01B/W
Operating Voltage (V)	24	24	24	24	24
Power (W)	0.50	0.50	0.90	0.90	0.90
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm)	615	587	528	470	X=0.32; Y=0.31
LEDs/Module	8	8	8	8	8
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	33 X 5.5 X 11	33 X 5.5 X 11			
Inter-LED Spacing (degrees)	45				
Luminous Flux (lm)	3	2	3	1	5
Luminous Intensity (cd)	135	0.105	0.135	0.04	0.195
Viewing Angle (°)	120	120	120	120	120



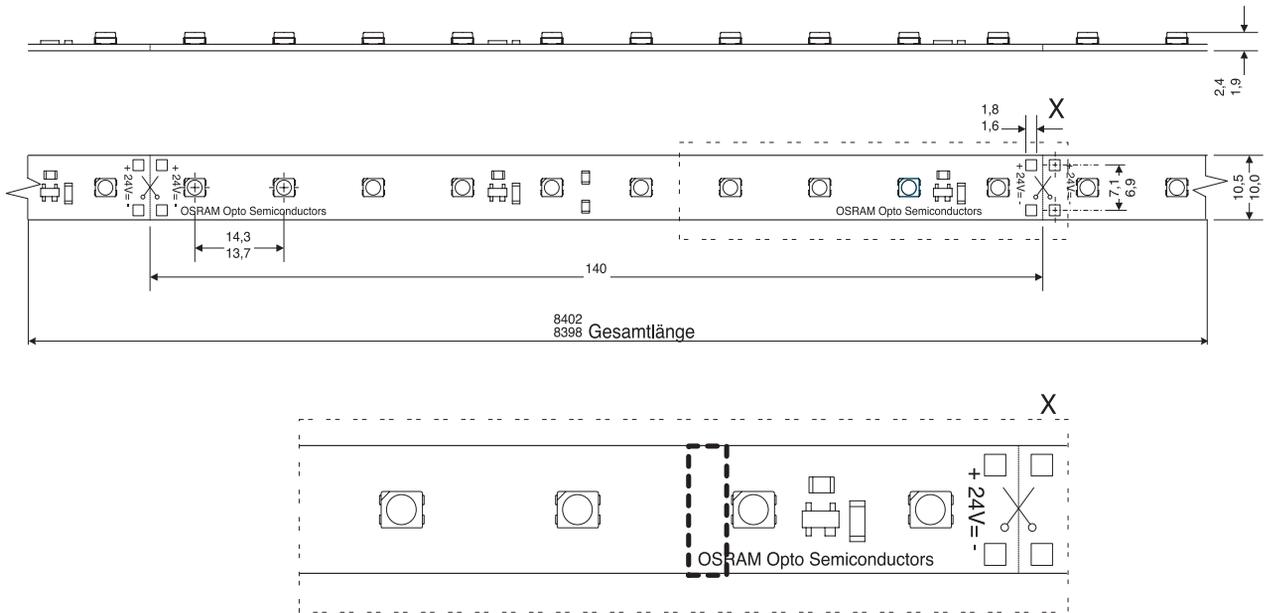
COINLIGHT – SIDELED – 12 LEDS

Product Number	70051	70052	70053	70054	70055
Ordering Abbreviation	COIN/587/OS/CM01C/Y	COIN/615/OS/CM01C/A	COIN/525/OS/CM01C/T	COIN/470/OS/CM01C/B	COIN/OS/CM01C/W
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.50	1.50	1.30	1.30	1.30
Color	Yellow	Amber Red	True Green	Blue	White
Wavelength (nm)	587	615	525	470	X=0.32; Y=0.31
LEDs/Module	12	12	12	12	12
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	33 X 5.5 X 11	33 X 5.5 X 11			
Luminous Flux (lm)	3.6	4.3	3.7	1.4	6.5
Luminous Intensity (cd)	0.105	0.135	0.135	0.04	0.195
Viewing Angle (°)	120	120	120	120	120



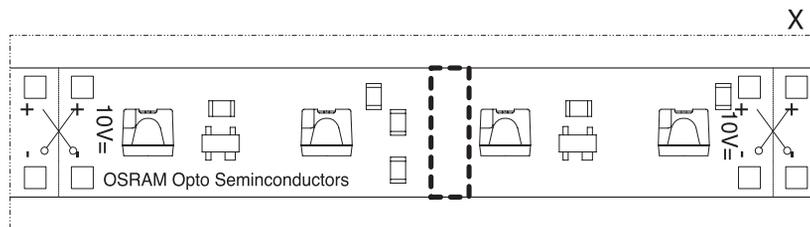
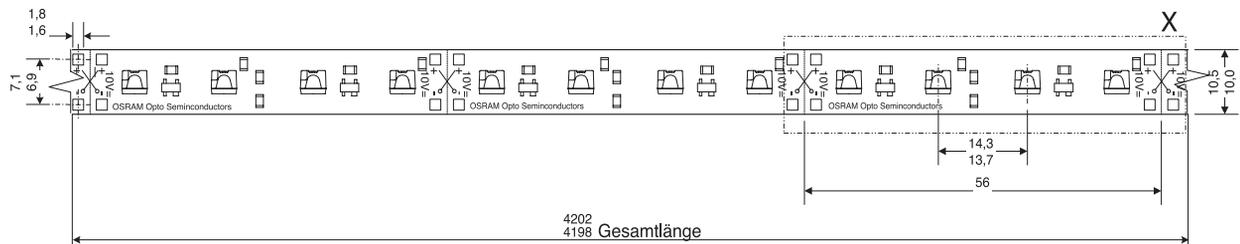
COINLIGHT – TOPLED

Product Number	70056	70057	70058	70059	70060
Ordering Abbreviation	COIN/OS/CM01E/W1	COIN/617/OS/CM01E/A1	COIN/587/OS/CM01E/Y1	COIN/525/OS/CM01E/T1	COIN/470/OS/CM01E/B1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.20	1.2	1.2	1.20	1.20
Color	White	Amber Red	Yellow	True Green	Blue
Wavelength (nm)	X=0.32; Y=0.31	617	587	525	470
LEDs/Module	9	9	9	9	9
Operating Temperature (°C)	-30 to +55	-30 to +55	- 30 to +55	-30 to +55	-30 to +55
Dimensions (mm)	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9	33 X 3.5 X 9
Luminous Flux (lm)	10	24	19	10	3
Luminous Intensity (cd)	0.37	0.89	0.70	0.37	0.11
Viewing Angle (°)	120	120	120	120	120



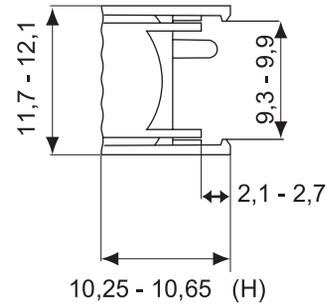
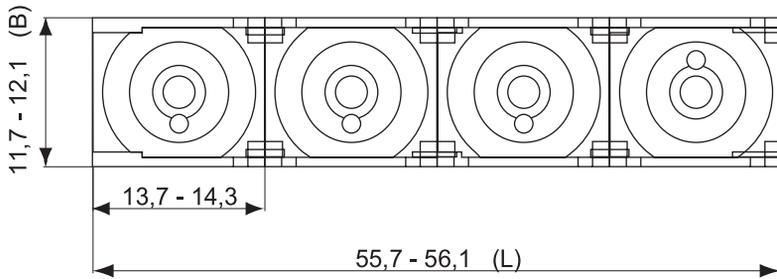
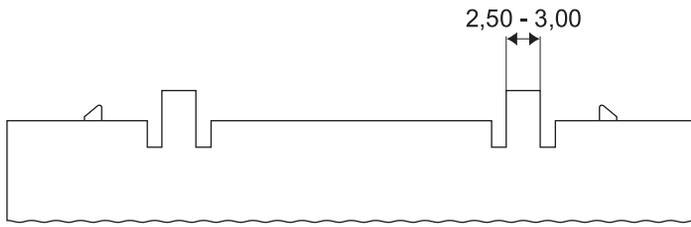
LINEARLIGHT – FLEXIBLE – TOPLED

Product Number	70061	70062	70063	70064	70065
Ordering Abbreviation	LINEARFLEXTOP/587/OS/LM10A/Y1	LINEARFLEXTOP/617/OS/LM10A/A	LINEARFLEXTOP/525/OS/LM10A/T1	LINEARFLEXTOP/470/OS/LM10A/B1	LINEARFLEXTOP/OS/LM10A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	72.0	72.0	72.0	72.0	57.6
Color	Yellow	Amber Red	True Green	Blue	White
Wavelength (nm)	587	617	525	469	
Color Temp (K)					5400K, 4700K
LEDs/Module	600	600	600	600	600
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5	8400 X 10 X 2.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000	14.000
Luminous Flux (lm)	1290	930	675	170	540
Luminous Intensity (cd)	0.72	0.53	0.38	0.09	0.30
Viewing Angle (°)	120	120	120	120	120



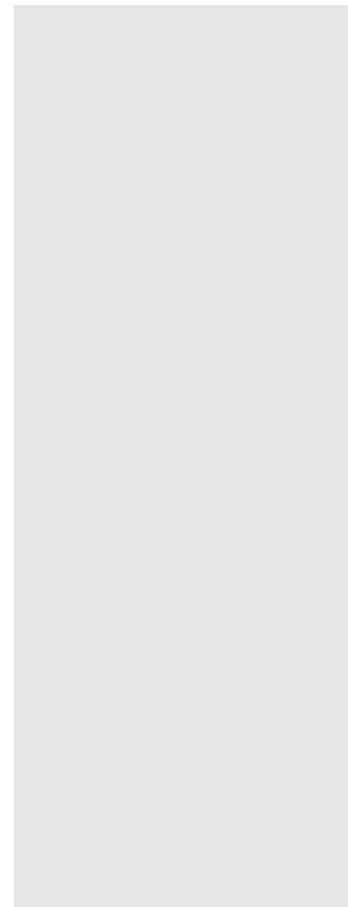
LINEARLIGHT – FLEXIBLE – SIDELED

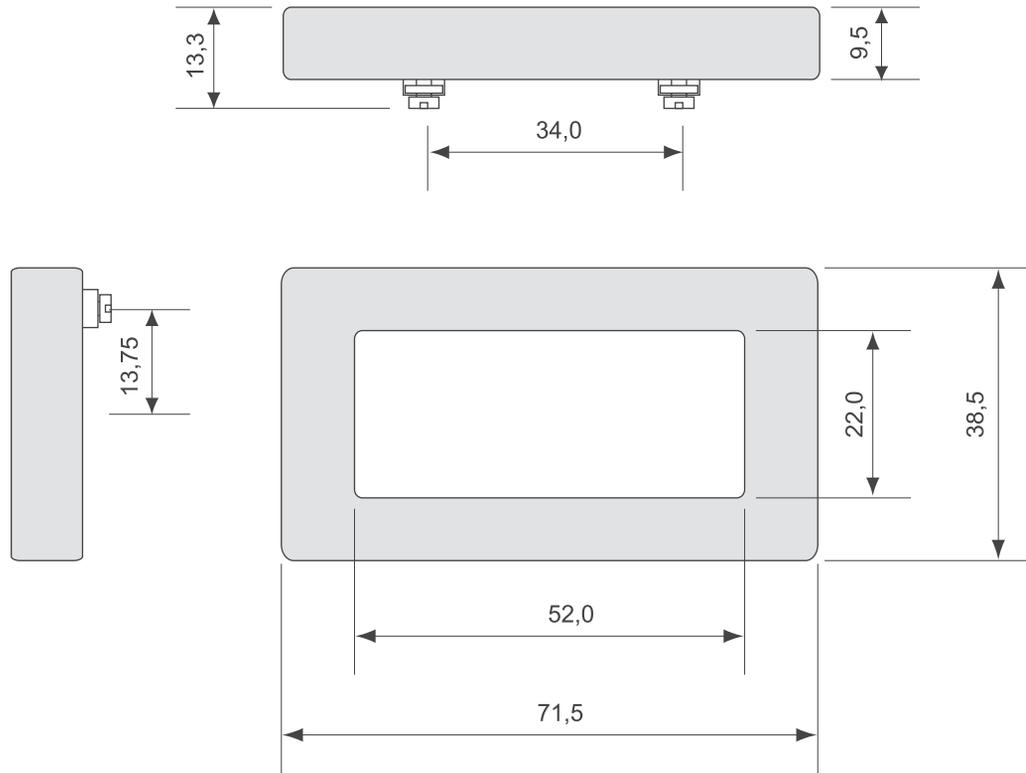
Product Number	70066	70067	70068	70069	70070
Ordering Abbreviation	LINEARFLEXSIDE/615/OS/LM11A/A	LINEARFLEXSIDE/587/OS/LM11A/Y1	LINEARFLEXSIDE/525/OS/LM11A/T	LINEARFLEXSIDE/470/OS/LM11A/B	LINEARFLEXSIDE/OS/LM11A/W1
Operating Voltage (V)	10	10	10	10	10
Power (W)	15.0	22.5	30.0	30.0	30.0
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm)	615	587	528	470	
Color Temp (K)					5400K, 4700K
LEDs/Module	300	300	300	300	300
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	4200X10X4.5	4200X10X4.5	4200X10X4.5	4200X10X4.5	4200X10X4.5
Inter-LED Spacing (mm)	14.000	14.000	14.000	14.000	14.000
Luminous Flux (lm)	117	405	147	37	405
Luminous Intensity (cd)	0.135	0.45	0.16	0.04	0.45
Viewing Angle (°)	120	120	120	120	120



OPTICS ACCESSORIES

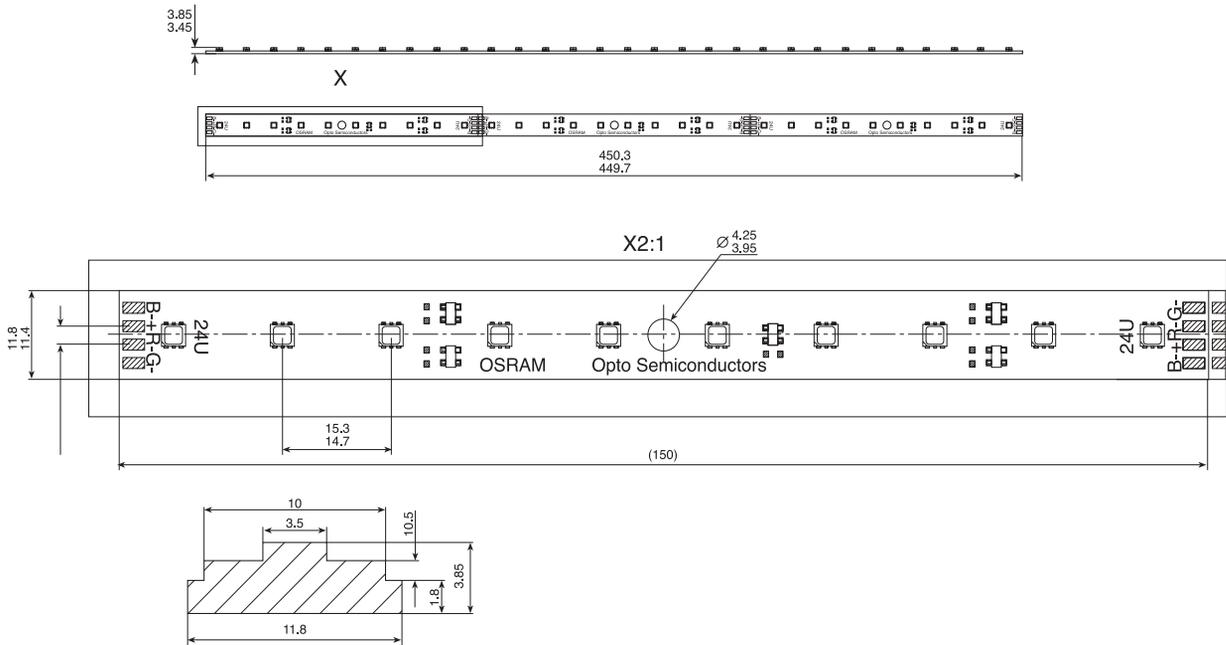
Product Number	70072
Ordering Abbreviation	LINEARLT OPTICS OS-OP4X1-20
Operating Voltage (V)	
Power (W)	
Color	
Wavelength (nm)	
LEDs/Module	
Operating Temperature (°C)	-30 to +65
Dimensions (mm)	
Inter-LED Spacing (mm)	
Luminous Flux (lm)	
Luminous Intensity (cd)	0.7 - 6.0
Viewing Angle (°)	20 (except 25° for white)
Maximum Board Spacing (mm)	





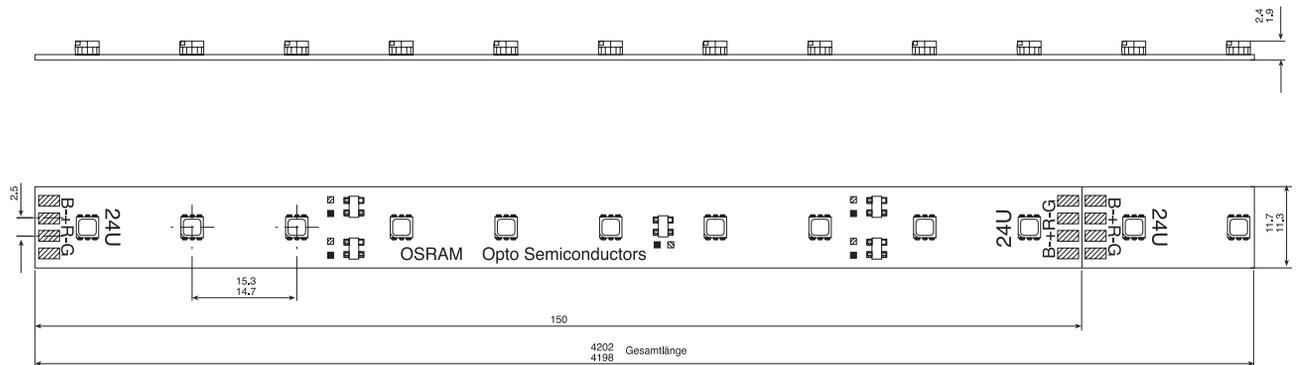
LED TAG

Product Number	70073	70074	70075	70076	70077
Ordering Abbreviation	LEDTag/633/OS-ML90A-S	LEDTag/606/OS-ML90A-O	LEDTag/528/OS-ML90A-T	LEDTag/470/OS-ML90A-B	LEDTAG/OS-ML90A-W
Operating Voltage (V)	9	9	9	9	9
Power (W)	0.18	0.18	0.36	0.36	0.36
Color	Super Red	Orange	True Green	Blue	White
Wavelength (nm)	633	606	528	470	X=0.32; Y=0.31
LEDs/Module	4	4	4	4	4
Operating Temperature (°C)	-30 to +45	-10 to +45	-10 to +45	-10 to +45	-10 to +45
Dimensions (mm)	71.5 X 38.5 X 14	71.5 X 38.5 X 14			
Inter-LED Spacing (mm)					
Luminance (cd/m ²)	185	420	290	85	420
Luminous Intensity (cd)					
Viewing Angle (°)					
Maximum Board Spacing (mm)					



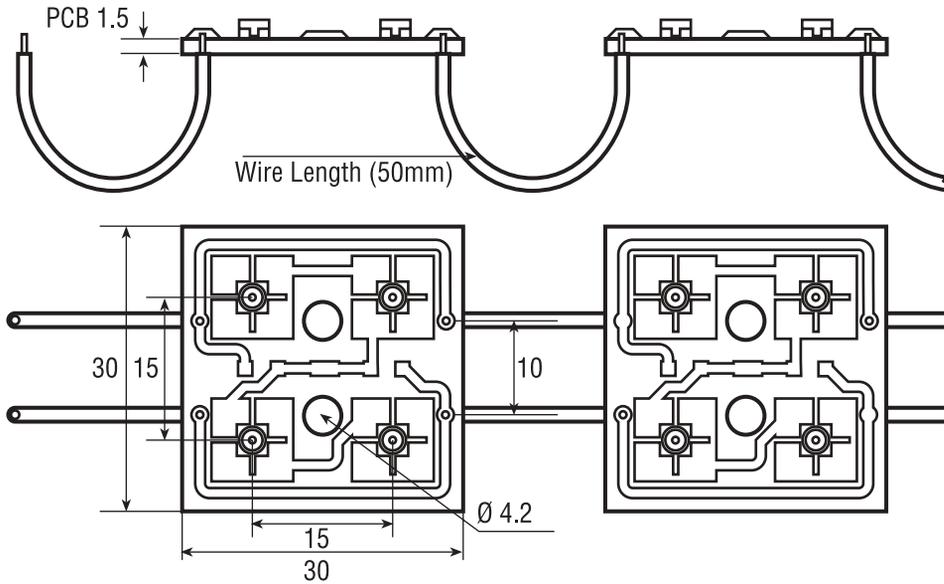
LINEARLIGHT COLORMIX

Product Number	70080			
Ordering Abbreviation	LINEARCOLORMIX/OS /LM01M/RGB			
Operating Voltage (V)	24	24	24	24
Power (W)	8.3	1.8	3.6	2.9
Color	All colors	Red	Green	Blue
Wavelength (nm)	---	617	525	467 for -B7; 473 for -B8
LEDs/Module	30	30	30	30
Operating Temperature (°C)	-30...+65	-30...+65	-30...+65	-30...+65
Dimensions (mm)	450 x 12 x 4			
Inter-LED Spacing (mm)	15			
Luminous Flux (lm)	91	32	51	8
Luminous Intensity (cd)	1.0	0.36	0.57	0.09
Viewing Angle (°)	120	120	120	120



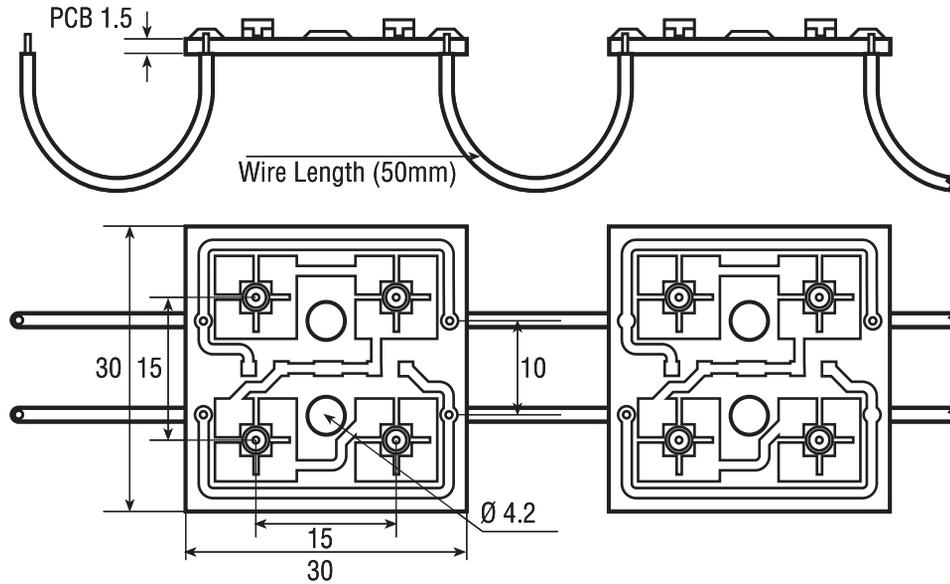
LINEARLIGHT FLEX TOP COLORMIX

Product Number	70082			
Ordering Abbreviation	LINEARFLEXTOPCOLORMIX /OS/LM10M/RGB			
Operating Voltage (V)	24	24	24	24
Power (W)	77.5	16.8	33.6	27.1
Color	All colors	Red	Green	Blue
Wavelength (nm)	---	617	525	467, 473
LEDs/Module	280	280	280	280
Operating Temperature (°C)	-30...+65	-30...+65	-30...+65	-30...+65
Dimensions (mm)	4200 x 11.5 x 2.5			
Inter-LED Spacing (mm)	15			
Luminous Flux (lm)	849	299	476	75
Luminous Intensity (cd)	1.0	0.36	0.57	0.09
Viewing Angle (°)	120	120	120	120



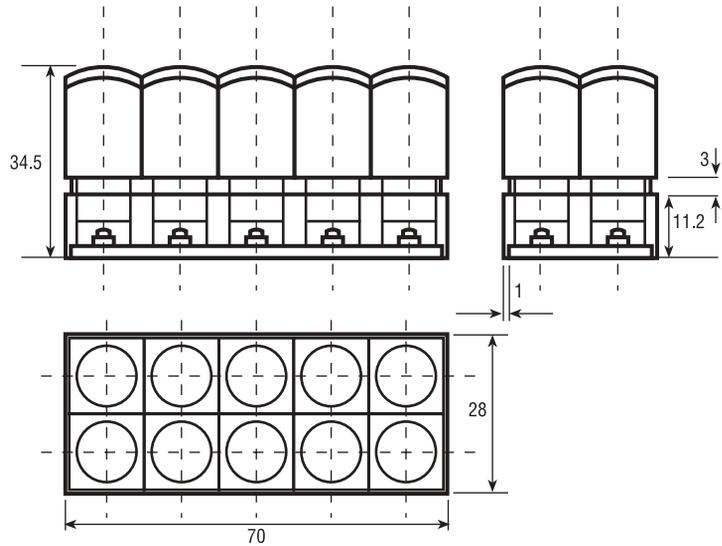
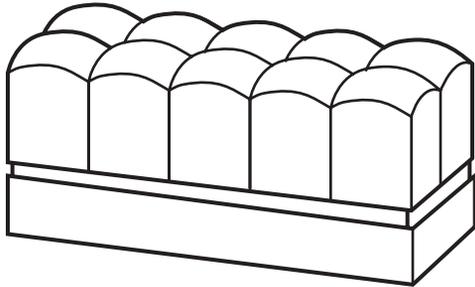
BACKLIGHT

Product Number	70011	70012	70013
Ordering Abbreviation	BACKLITE/615/OS/LM03A/A	BACKLITE/587/OS/LM03A/Y1	BACKLITE/525/OS/LM03A/T1
Operating Voltage (V)	10	10	10
Power (W)	4.00	4.0	4.00
Color	Amber Red	Yellow	True Green
Wavelength (nm)	617	587	525
LEDs/Module	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65
Dimensions	559 x 30 x 6	559 X 30 X 6	559 x 30 x 6
Inter-LED Spacing	15.000	15.000	15.000
Luminous Flux (lm)	54	69	36
Luminous Intensity (cd)	0.535	0.72	0.38
Viewing Angle (°)	120	120	120



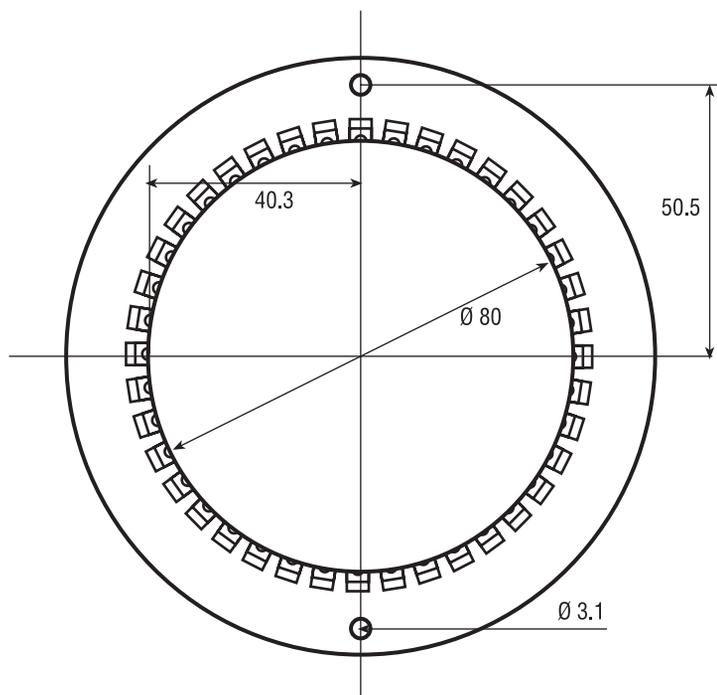
BACKLIGHT

Product Number	70014	70045	70071	70081
Ordering Abbreviation	BACKLITE/470/OS/LM03A/B	BACKLITE/OS/LM03A/W1	BACKLITE/610/OS/LM03B/O	BACKLITE/633/OS/LM03A/S
Operating Voltage (V)	10	10	10	10
Power (W)	4.00	3.20	4.0	4.0
Color	Blue	White	Orange	Super Red
Wavelength (nm)	470		606	633
Color Temp (K)		6500K, 5400K		
LEDs/Module	32	32	32	32
Operating Temperature (°C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions	559 X 30 X 6	559x30x6	559X30X6	559x30x6
Inter-LED Spacing	15.000	15.000	15.000	15.000
Luminous Flux (lm)	9	29	86	54
Luminous Intensity(cd)	0.09	0.30	0.90	0.535
Viewing Angle (°)	120	120	120	120



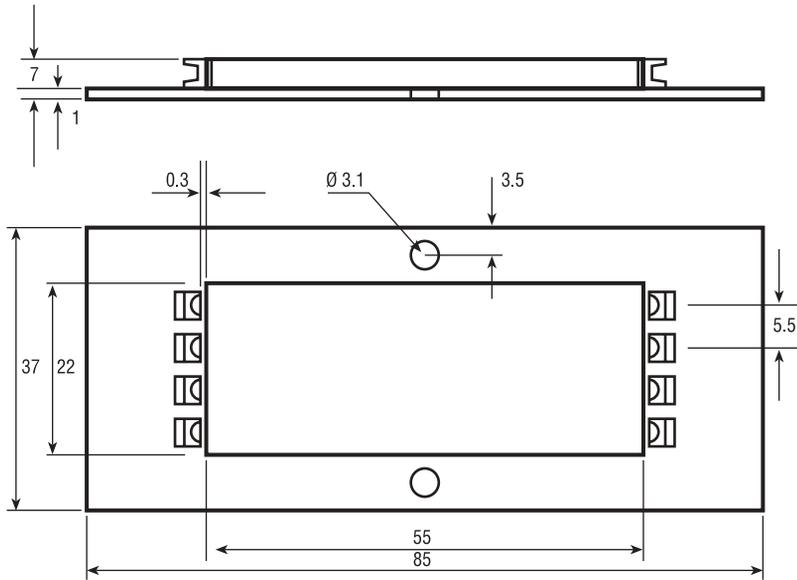
EFFECTLIGHT

Product Number	70015	70016	70017	70018
Ordering Abbreviation	FXLITE/615/OS/WL01A/A1	FXLITE/587/OS/WL01A/Y1	FXLITE/505/OS/WL01A/V1	FXLITE/470/OS/WL01A/B1
Operating Voltage (V)	24	24	24	24
Power (W)	1.1	1.1	1.3	1.3
Color	Amber Red	Yellow	Verde	Blue
Wavelength (nm)	617	587	503	469
LEDs/Module	10	10	10	10
Operating Temperature (° C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	70 x 28 x 34.5			
Luminous Intensity (cd)	3500	2500	2000	350
Viewing Angle (°)	4	4	4	4



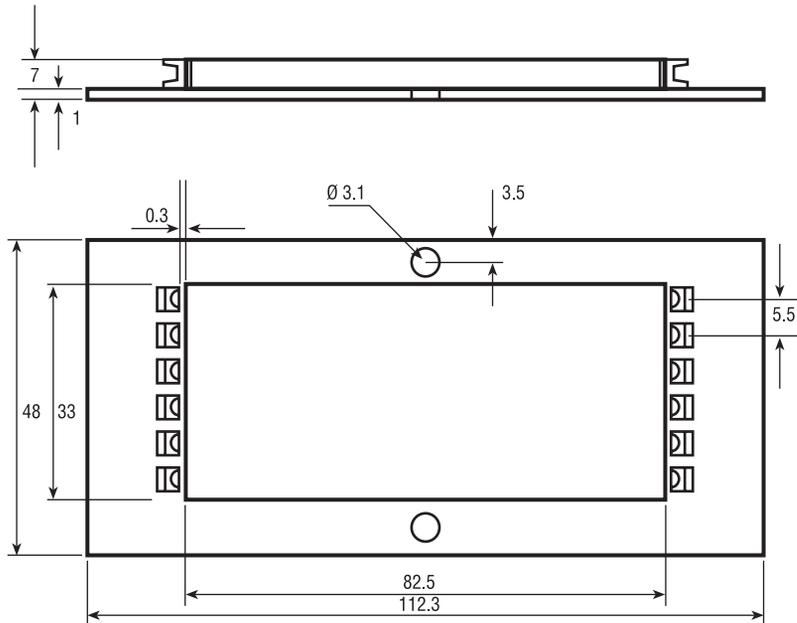
MARKERLIGHT – CIRCULAR

Product Number	70039	70040	70041	70042	70043
Ordering Abbreviation	ML/80D/615/OS/ML03A/A	ML/80D/587/OS/ML03A/Y1	ML/80D/525/OS/ML03A/T	ML/80D/470/OS/ML03A/B	ML/80D/OS/ML03A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.92	2.88	3.84	3.84	3.84
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	528	470	X=0.32 Y=0.31
LEDs/Module	40	40	40	40	40
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7	110 x 110 x 7
Luminance (cd/m ²)	705	1630	705	205	2050
Luminous Area (diameter, mm)	77	77	77	77	77



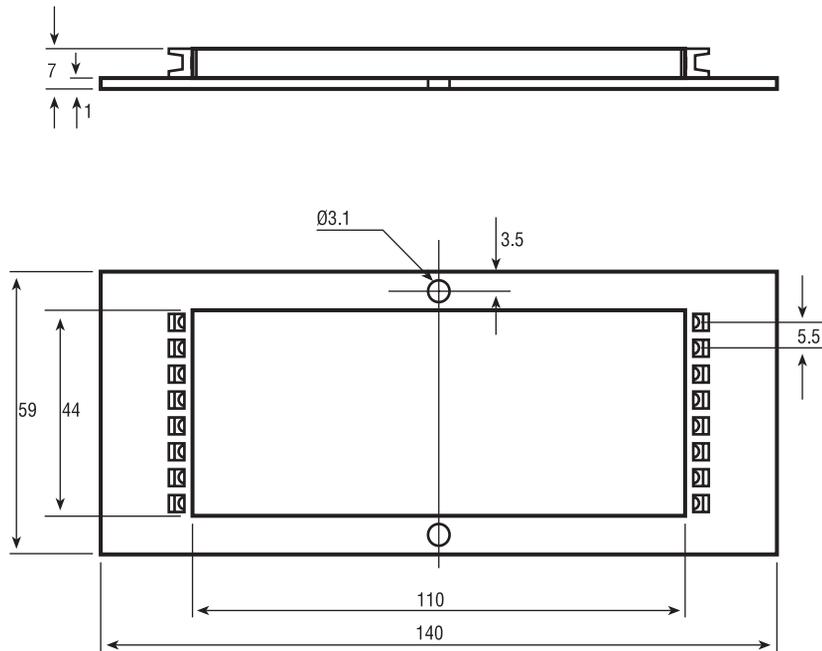
MARKERLIGHT – RECTANGULAR – SMALL

Product Number	70019	70020	70021	70022	70023
Ordering Abbreviation	ML/55X22/615/OS/ML01A/A	ML/55X22/587/OS/ML01A/Y	ML/55X22/525/OS/ML01A/T	ML/55X22/470/OS/ML01A/B	ML/55X22/OS/ML01A/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.40	0.40	0.80	0.80	0.80
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	8	8	8	8	8
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	85 x 37 x 7	85 x 37 x 7	88 x 37 x 7	85 x 37 x 7	85 x 37 x 7
Luminance (cd/m ²)	715	440	725	140	880
Luminous Area (mm)	52 x 22	52 x 22	52 x 22	52 x 22	52 x 22



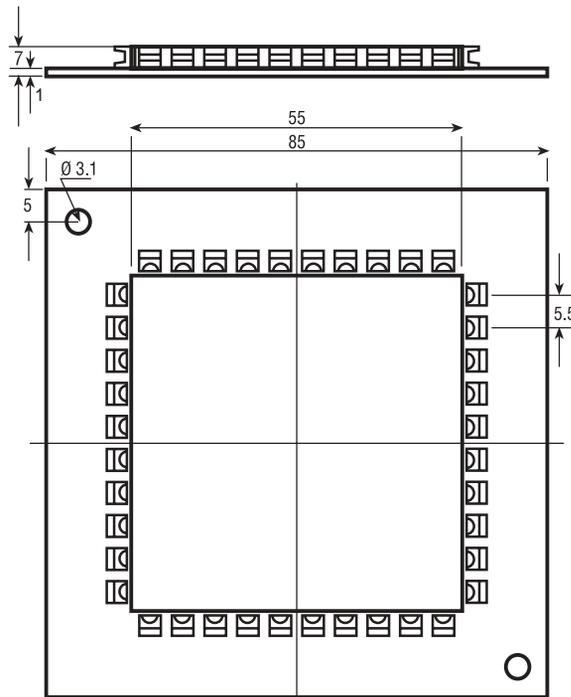
MARKERLIGHT – RECTANGULAR – MEDIUM

Product Number	70024	70025	70026	70027	70028
Ordering Abbreviation	ML/82X33/615/OS/ML01B/A	ML/82X33/587/OS/ML01B/Y	ML/82X33/525/OS/ML01B/T	ML/82X33/470/OS/ML01B/B	ML/82X33/OS/ML01B/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.60	0.60	1.20	1.20	1.20
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	12	12	12	12	12
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	112.5 x 48 x 7	112.5 x 48 x 5			
Luminance (cd/m ²)	405	370	410	90	360
Luminous Area (mm)	79.5 x 33	79.5 x 33	79.5 x 33	79.5 x 33	79.5 x 33



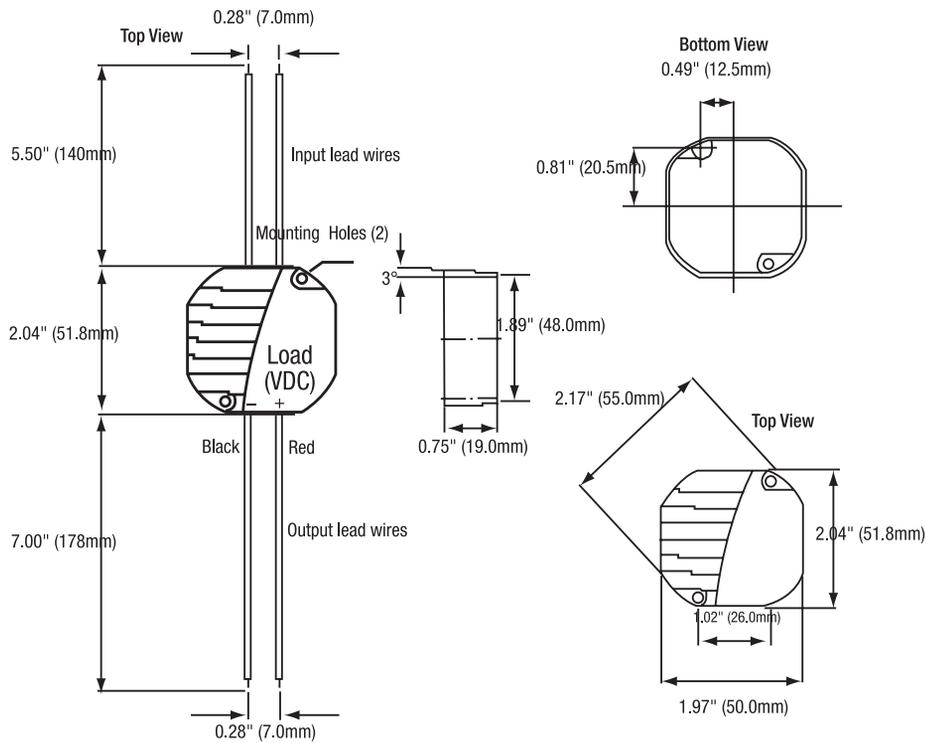
MARKERLIGHT – RECTANGULAR – LARGE

Product Number	70029	70030	70031	70032	70033
Ordering Abbreviation	ML/110X44/615/OS /ML01C/A	ML/110X44/587/OS /ML01C/Y	ML/110X44/525/OS /ML01C/T	ML/110X44/470/OS /ML01C/B	ML/110X44/OS /ML01C/W
Operating Voltage (V)	10	10	10	10	10
Power (W)	0.80	0.80	1.60	1.60	1.60
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	525	470	X = 0.32 Y = 0.31
LEDs/Module	16	16	16	16	16
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	140 x 59 x 7	140 x 59 x 7			
Luminance (cd/m ²)	320	300	330	80	280
Luminous Area	107 x 44	107 x 44	107 x 44	107 x 44	107 x 44



MARKERLIGHT – SQUARE

Product Number	70034	70035	70036	70037	70038
Ordering Abbreviation	ML/55SQ/615/OS/ML02A/A	ML/55SQ/587/OS/ML02A/Y1	ML/55SQ/525/OS/ML02A/T	ML/55SQ/470/OS/ML02A/B	ML/55SQ/OS/ML02A/W1
Operating Voltage (V)	24	24	24	24	24
Power (W)	1.92	2.88	3.84	3.84	3.84
Color	Amber Red	Yellow	True Green	Blue	White
Wavelength (nm) / Color Coordinates	615	587	528	470	X=0.32 Y=0.31
LEDs/Module	40	40	40	40	40
Operating Temperature (deg C)	-30 to +65	-30 to +65	-30 to +65	-30 to +65	-30 to +65
Dimensions (mm)	85 x 85 x 7	85 x 85 x 7	85 x 85 x 7	85 X 85 X 7	85 x 85 x 7
Luminance (cd/m ²)	1170	2700	1170	340	3400
Luminous Area (mm)	52 x 52	52 x 52	52 x 52	52 x 52	52 x 52



OPTOTRONIC LED POWER SUPPLY

Product Number	51500	51505	51508	51501	51512
Description	OT6/100-240/10COS	OT25/120/10	OT50/120/10	OT6/100 - 240/24COS	OT20/120-240/24S
Input Voltage (VAC)	100 - 240	120	120	100 - 240	120 - 240
Input Current (Amps)	.15@120V , .050@ 240V	.26@120V	.52@120V	.15@120V , .050@ 240V	.35@120V , .23@ 240V
Output Voltage (VDC)	10.5 +/- 0.5	10.5 +/- 1.0	10.5 +/- 1.0	24.0 +/- 0.5	24.0 +/- 0.5
Min. Power (W)	0.2	3	10	0.2	0.9
Max.Power (W)	6	25	50	6	20
Max. Line Ripple (V)	+/- .4V	+/- 1.1V	+/- 1.1V	+/- .4V	+/- .2V
Remote Mounting (ft)	26	10	8	26	32